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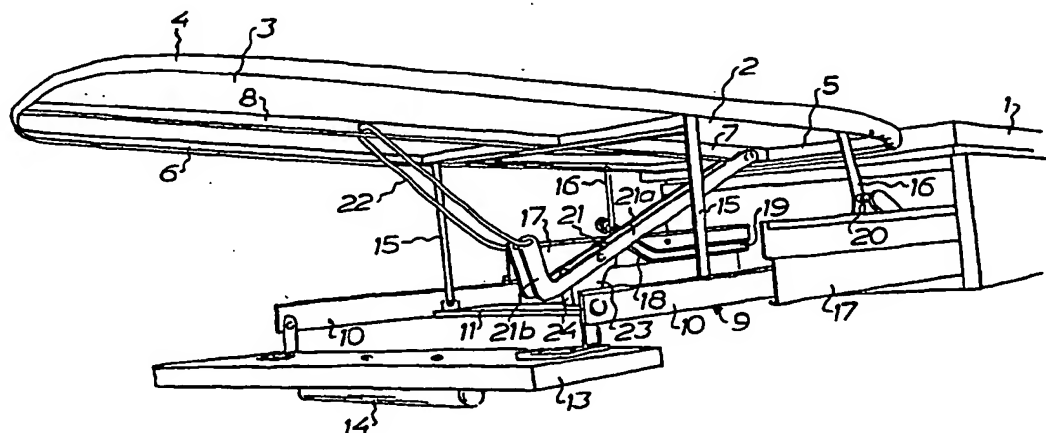
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(21) International Application Number: PCT/SE90/00630 (22) International Filing Date: 2 October 1990 (02.10.90) (30) Priority data: 8903341-9 11 October 1989 (11.10.89) SE (71) Applicant (for all designated States except US): PELLY INDUSTRI AB [SE/SE]; Box 70, S-330 33 Hillerstorp (SE). (72) Inventor; and (75) Inventor/Applicant (for US only): PETTERSON, Dan [SE/SE]; Hakabo, S-330 33 Hillerstorp (SE). (74) Agent: AWAPATENT AB; Box 5117, S-200 71 Malmö (SE).		(81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CM (OAPI patent), DE*, DE (European patent)*, DK, DK (European patent), ES, ES (European patent), FI, FR (European patent), GA (OAPI patent), GB, GB (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent), NO, RO, SD, SE, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent), US. Published <i>With international search report.</i> <i>In English translation (filed in Swedish).</i>

(54) Title: COLLAPSIBLE IRONING BOARD**(57) Abstract**

A collapsible ironing board mounted on a frame (9) and adapted, in drawerlike fashion, to be pushed into a table-top cupboard with an upper worktop (1), has a vertically adjustable first board (2) and a second board (3) pivotally connected thereto and pivotable between an unfolded working position and a folded push-in position. The ironing board comprises a stabilising device (21, 22) with an L-shaped angle lever (21) and an arm (22). One leg (21a) of the angle lever (21) is, at its free end, hinged to the underside of the first board (2), and its other leg (21b) is located slightly outwardly of the outer end of the first board (2) and directed upwards. At one end, the arm (22) is hinged to the second leg (21b) of the angle lever (21) and, at its other end, it is hinged to the underside of the second board (3). A tensioning lug (23), which projects downwardly from the angle lever (21), cooperates with a support member (11) in the frame (9). The tensioning lug (23) is designed in such manner that it, when the second board (3) is being unfolded, will engage the support member (11) and press the first board (2) against the front edge of the worktop (1), and, in the unfolded position, will form, together with the support member (11), a vertical support for the second board (3).

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COLLAPSIBLE IRONING BOARD

The present invention relates to a collapsible ironing board mounted on a frame and adapted, in drawer-like fashion, to be pushed into and pulled out of a space below a worktop, and comprising a first board mounted in vertically adjustable manner on said frame and adapted, before the ironing board is pushed into said space, to be lowered towards the frame and, after the ironing board has been pulled out of said space, elevated to the level of the worktop, and a second board pivotably connected to the first board about a first transverse axis to be pivoted between an unfolded working position in which it forms, together with the first board, the working surface of the ironing board, and a folded push-in position in which it is folded in over the first board.

Several designs of such ironing boards are available. In one prior art construction, the ironing board is pulled out of the space on its frame, and then is raised by hand to the level of the worktop. In another prior art construction, the ironing board is raised automatically when pulled out. Then, the ironing board is pressed by hand towards the worktop in such manner that the inner edge of the first board is applied against the front edge of the worktop. In this position, the first board is clamped against the front edge of the worktop, and the ironing board is locked in extended position by means of an operating arm arranged in the frame and cooperating with a clamping and locking unit fixedly arranged in said space. Subsequently, a support member provided at the underside of the first board is pulled out, and the second board is unfolded so that it is applied against the support member, which thus supports the second board when in unfolded position. However, this form of support is rather rickety; to store the ironing board in its space, it is first folded by pivoting the second board into folded position on the first board, whereupon the support member is pushed in

and the operating arm is actuated to release the ironing board. Then the ironing board is lowered towards the frame and finally pushed into said space.

As will be realised, the pushing-in and pulling-out of the known ironing board is a complicated procedure requiring special manipulations for clamping the ironing board against the front edge of the worktop. Furthermore, the support of the second board is, as mentioned above, rather rickety.

10 The object of the present invention is to provide a collapsible ironing board which has a stabilising device so designed that the above inconveniences are obviated.

According to the invention, this object is achieved by a collapsible ironing board which is of the type described in the introduction to this specification and which is characterised by a stabilising device comprising a substantially L-shaped angle lever whose one leg extends in the longitudinal direction of the ironing board and, at its free end and about a second transverse axis, is hingedly connected to the first board at the underside thereof, and whose other leg is located slightly outwardly of the outer end of the first board and directed upwards; an arm which, at one end and about a third transverse axis, is hingedly connected to the second leg of the angle lever at the free end of this leg and, at the other end and about a fourth transverse axis, is hingedly connected to the second board at the underside thereof; and a tensioning lug fixed to the angle lever and projecting downwardly therefrom and having a cam surface which is adapted to cooperate with a support member forming part of the frame and which is designed in such manner that it, when the second board is being unfolded, will engage the support member and press the first board against the front edge of the worktop and, in the unfolded position, will form, together with said support member, a vertical support for the second board.

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Preferably, said one leg of the angle lever is hingedly connected to the first board in the vicinity of the inner end thereof, and said other leg of the angle lever has a length substantially equal to the total thickness of the two boards.

In a simple embodiment of the invention, the support member is a crossbeam in the frame.

The invention will be described in more detail below, reference being had to the accompanying drawings in which

10 Fig. 1 is a schematic perspective view illustrating an inventive ironing board in pulled-out but not unfolded position,

Fig. 2 is a schematic perspective view illustrating the ironing board in pulled-out position and in the process of being unfolded, and

15 Fig. 3 is a schematic perspective view illustrating the ironing board in pulled-out and unfolded position.

The ironing board shown in the drawings is mounted in a table-top cupboard of which only the upper part comprising an upper table-top or worktop 1 is shown.

20 The ironing board proper consists of two substantially rectangular boards 2 and 3 which are covered by a single heat-reflecting cloth 4. The boards 2 and 3 are arranged after one another, short side against short side, in the longitudinal direction of the ironing board (see 25 Fig. 3) and are, pivotably interconnected about a transverse axis in such manner that the outer board 3 is pivotable between an unfolded working position (Fig. 3), in which it forms, together with the inner board 2, the horizontal working surface of the ironing board, and a 30 folded push-in position (Fig. 1), in which it is folded over the inner board 2. The undersides of each of the boards 2 and 3 have a circumferential stiffening frame 5 and 6, respectively, as well as a stiffening lath 7 and 8, 35 respectively, arranged in said stiffening frame and extending along the mid-portion of the respective board.

The inner board 2 is mounted on a frame 9 which is made up of two longitudinal side members 10 and two crossbeams 11 and 12 serving to interconnect the side members. A front member 13 with a handle 14 is pivotably connected about a transverse axis to the two side members 10, at the outer ends thereof.

At their lower ends, two outer link arms 15 are hingedly connected to the outer crossbeam 11 about a common transverse axis, and, at their upper ends, they are hingedly connected to the stiffening frame 5 of the inner board 2 about a common transverse axis. At their lower ends, two inner link arms 16 slightly angled outwards are hingedly connected, about a common transverse axis, to the inner crossbeam 12, and, at their upper ends, hingedly connected, about a common transverse axis, to the stiffening frame 5 of the inner board 2.

The side members 10 of the frame 9 are displaceably arranged in horizontal guide rails 17 which in turn are displaceably mounted in the table-top cupboard. In the drawings, both the side members 10 and the guide rails 17 are shown in fully extended position. Each guide rail 17 supports a guide member 18 with a guiding track 19. At its angular portion, each inner link arm 16 supports a roller 20 engaging a guiding track 19.

When the ironing board is to be pushed into the table-top cupboard from the position shown in Fig. 1, the front member 13 is pressed inwards, so that the frame 9 is pushed into the guide rails 17, while the inner board 2, on which the outer board 3 is folded, is lowered towards the frame 9 by the cooperating rollers 20 and guiding tracks 19. Upon further inward-pushing movement, the guide rails 17, into which the frame 9 has been pushed, are urged into the table-top cupboard, and the entire ironing board is thus stowed away.

When the ironing board is to be pulled out of the table-top cupboard, the front member 13 is pulled outwards, so that the guide rails 17, into which the frame 9

has been pushed, are pulled out. Upon further pulling movement, the frame 9 is pulled out of the guide rails 17, the rollers 20 travelling in the guiding tracks 19 and raising the inner board 2, on which the outer board 3 is folded, from the frame 9 to the level of the worktop 1. In the final phase of the pulling-out operation, the rollers 20 cause the inner board 2 to make a short backward movement towards the front edge of the worktop 1.

Further, the ironing board has a stabilising device consisting of an L-shaped angle lever 21, an arm 22, and a tensioning lug 23.

The angle lever 21 (actually, two juxtaposed levers) has a long leg 21a extending in the longitudinal direction of the ironing board and having substantially the same length as the inner board 2. At its free end, the long leg 21a is, about a transverse axis, hingedly connected to the stiffening lath 7 of the inner board 2, at the inner end of this lath. The second leg 21b of the angle lever 21, which is much shorter than the leg 21a, is directed upwards and has a length substantially equal to the total thickness of the two boards 2 and 3 (see Fig. 1).

The arm 22 is in the form of a substantially U-shaped yoke of circular cross-section whose web portion extends in the transverse direction through the short leg 21b of the angle lever 21, at the free end of this leg. Thus, the arm 22 is, about a transverse axis, hingedly connected to the leg 21b. The legs of the yoke extend in the longitudinal direction of the ironing board and are, at their free ends, bent and inserted into a transverse hole made in the stiffening lath 8 of the outer board 3, at a point located somewhat closer to the articulated connection between the two boards than the outer end of the outer board. Thus, the arm 22 is, about a transverse axis, hingedly connected to the stiffening lath 8 of the outer board 3.

The tensioning lug 23 is fixed to the long leg 21a of the angle lever 21, between the levers forming said angle lever. The tensioning lug 23 is located in the vicinity of the short leg 21b and projects at the underside of the long leg 21a to cooperate with the outer crossbeam 11. For this purpose, the tensioning lug 23 has an outwardly facing cam surface 24 with a lower portion inclined upwards and outwards, and a flat upper portion also inclined upwards and outwards but much less than the first portion. In the transitional area between the lower and the upper portion, the cam surface 24 is formed with a minor recess. The lower portion of the cam surface 24 constitutes the tensioning portion of the tensioning lug 23, the upper portion constitutes the support portion of the tensioning lug 23, and the recess may be said to form the locking portion of the tensioning lug 23.

When the outer board 3 is unfolded from the folded position in Fig. 1, the angle lever 21 is pivoted downwards by the arm 22, as is apparent from Figs 2 and 3. The lower portion of the cam surface 24 will, in the final phase of this pivoting movement, engage the inner edge portion of the outer crossbeam 11. The angle lever 21 fixedly connected to the tensioning lug 23 urges the inner board 2 against the front edge of the worktop 1, thereby stabilising the ironing board properly in the lateral direction. When the outer board 3 is altogether unfolded and forms, together with the inner board 2, a flat horizontal working surface, the tensioning lug 23 with the upper portion of the cam surface 24 is applied against the upper side of the outer crossbeam 11, thereby stabilising the ironing board properly also in the vertical direction. In this position, the recess between the upper and lower portions of the cam surface 24 has come to engage, by snap-in action, the inner edge of the outer crossbeam 11 to maintain the outer board 3 in unfolded position and keep the inner board 2 urged against the front edge of the worktop 1.

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As is apparent from the foregoing, no manipulation other than the unfolding of the outer board 3 is needed to properly clamp the inner board 2 against the front edge of the worktop 1.

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CLAIMS

1. A collapsible ironing board mounted on a frame (9) and adapted, in drawer-like fashion, to be pushed into and pulled out of a space below a worktop (1), and comprising a first board (2) mounted in vertically adjustable manner on said frame (9) and adapted, before the ironing board is pushed into said space, to be lowered towards the frame and, after the ironing board has been pulled out of said space, elevated to the level of the worktop (1), and a second board (3) pivotably connected to the first board (2) about a first transverse axis to be pivoted between an unfolded working position in which it forms, together with the first board, the working surface of the ironing board, and a folded push-in position in which it is folded in over the first board, characterised by a stabilising device (21, 22, 23) comprising a substantially L-shaped angle lever (21) whose one leg (21a) extends in the longitudinal direction of the ironing board and, at its free end and about a second transverse axis, is hingedly connected to the first board (2) at the underside thereof, and whose other leg (21b) is located slightly outwardly of the outer end of the first board (2) and directed upwards; an arm (22) which, at one end and about a third transverse axis, is hingedly connected to the second leg (21b) of the angle lever (21) at the free end of this leg and, at the other end and about a fourth transverse axis, is hingedly connected to the second board (3) at the underside thereof; and a tensioning lug (23) fixed to the angle lever (21) and projecting downwardly therefrom and having a cam surface (24) which is adapted to cooperate with a support member (11) forming part of the frame (9) and which is designed in such manner that it, when the second board (3) is being unfolded, will engage the support member (11) and press the first board (2) against the front edge of the worktop (1) and, in the unfolded position, will form, together with said support

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member (11), a vertical support for the second board (3).

2. The ironing board of claim 1, c h a r a c t e -
r i s e d in that said one leg (21a) of the angle lever
(21) is hingedly connected to the first board (2) in the
vicinity of the inner end thereof.

3. The ironing board of claim 1 or 2, c h a r a c -
t e r i s e d in that said other leg (21b) of the angle
lever (21) has a length substantially equal to the total
thickness of the two boards (2, 3).

4. The ironing board of any one of claims 1-3,
c h a r a c t e r i s e d in that the support member (11)
is a crossbeam in the frame (9).

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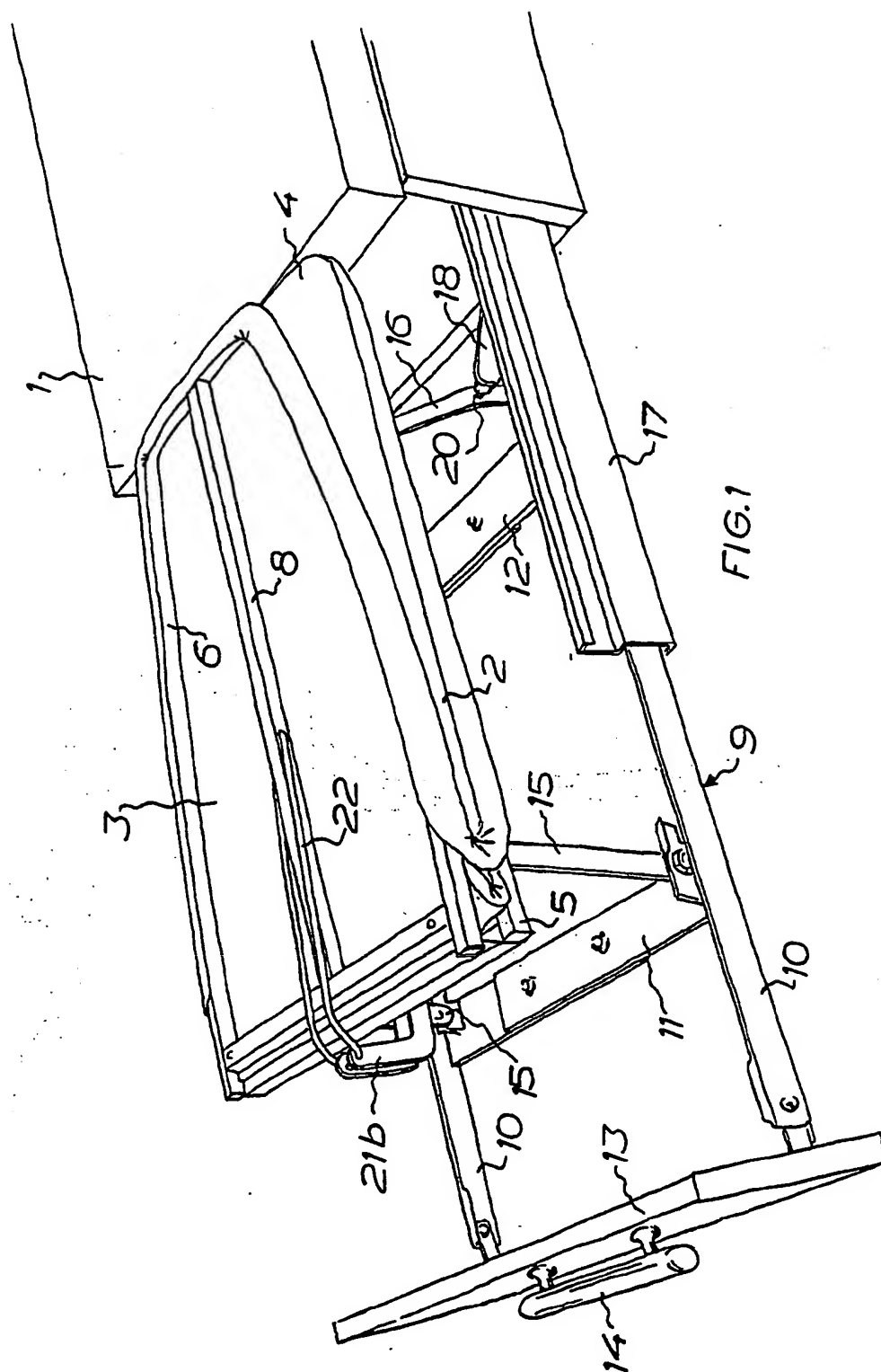
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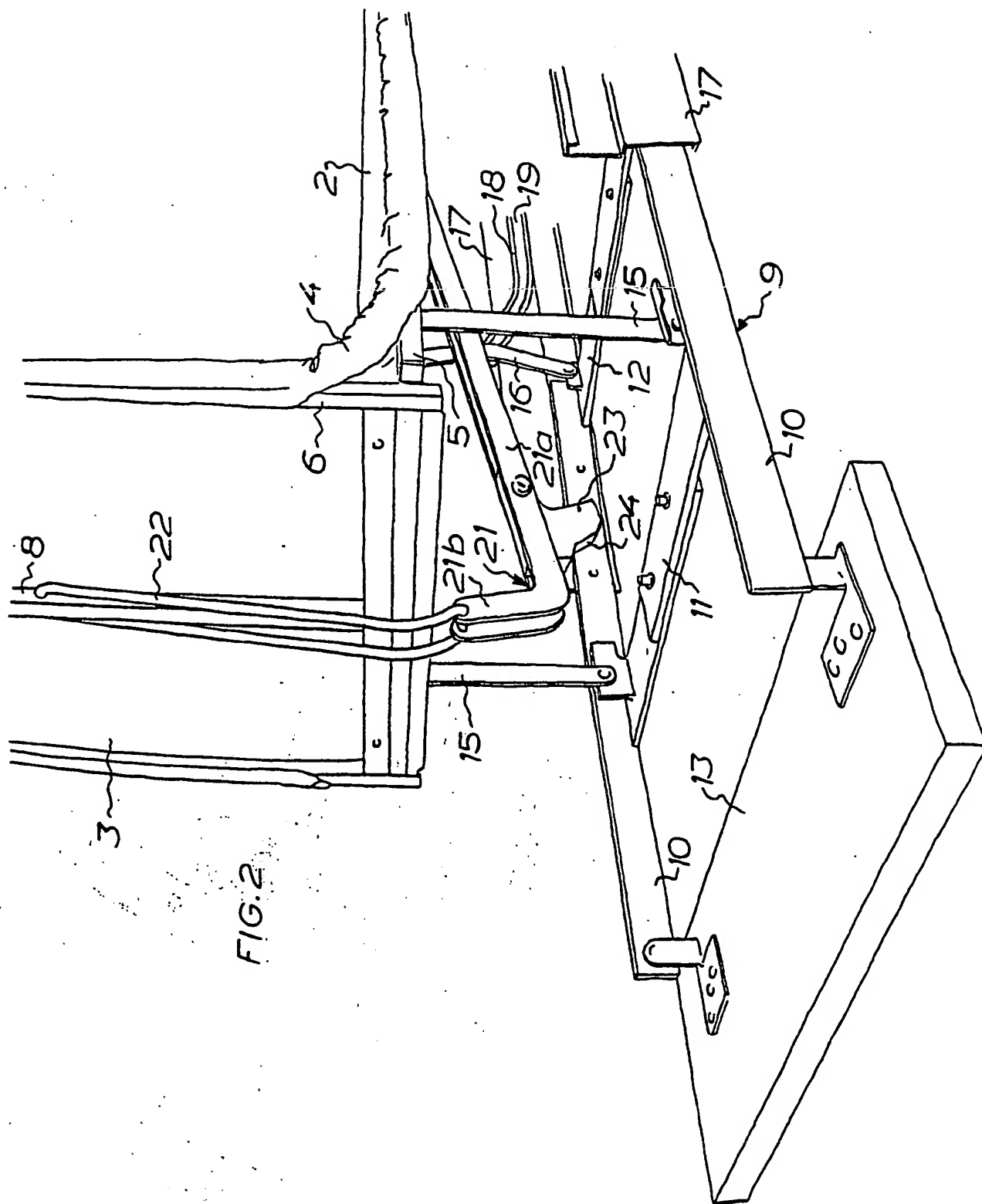


FIG. 2

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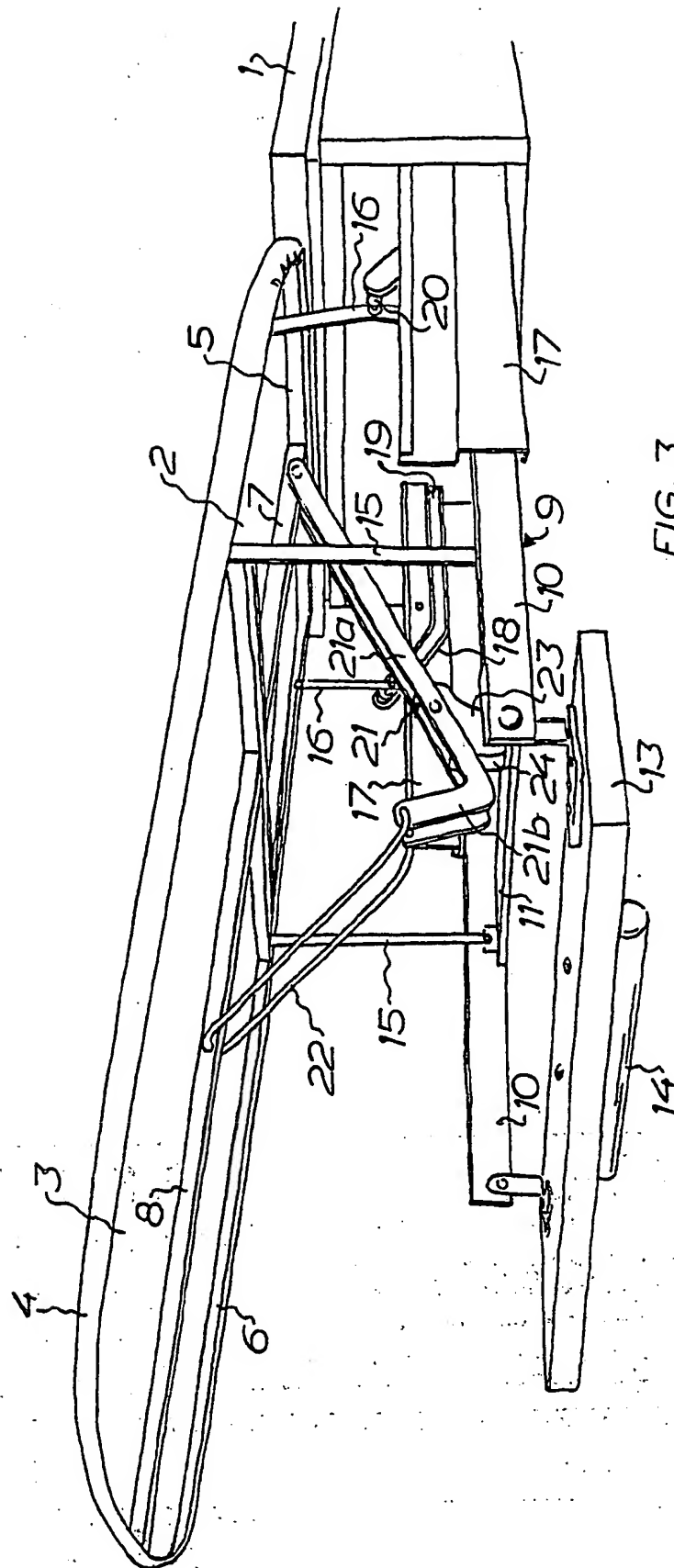


FIG. 3

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE 90/00630

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶ According to International Patent Classification (IPC) or to both National Classification and IPC IPC5: A 47 B 77/10, D 06 F 81/00		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
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III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category *	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	DE, A, 3430491 (HÄFELE KG) 27 February 1986, see page 7, line 11 - line 25 --	1-4
A	FR, A, 2354732 (M. CORNET) 13 January 1978, see page 3, line 30 - line 34 --	1-4
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<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>* Special categories of cited documents:¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p> </div> </div>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
4th January 1991	1991-01-15	
International Searching Authority	Signature of Authorized Officer	
SWEDISH PATENT OFFICE	<i>Harriet Ekdahl</i> Harriet Ekdahl	

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO. PCT/SE 90/00630**

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the Swedish Patent Office EDP file on **90-11-28**.
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A- 3430491	86-02-27	AU-B- 577995	88-10-06
		AU-D- 4568785	86-02-20
		EP-A-B- 0173036	86-03-05
		JP-C- 1473296	88-12-27
		JP-A- 61122900	86-06-10
		US-A- 4637321	87-01-20
FR-A- 2354732	78-01-13	NONE	
FI-C- 35686	66-10-15	NONE	